

IN THE CLAIMS

The following is a complete listing of the claims, which replaces all previous versions and listings of the claims.

1. (currently amended) A resistance temperature detector suitable for detecting temperatures between windings of an electrical machine, each winding including a conductor at least partially surrounded by a winding insulating system having a predetermined capacitance per unit area, the detector comprising:

a resistive element configured to receive an input signal via a lead and to produce an output signal that is a function of temperature;

a detector insulating system disposed about and completely encasing the resistive element, the detector insulating system having a capacitance per unit area approximately equal to or greater than the capacitance per unit area of the winding insulating system.

2. (original) The resistance temperature detector of claim 1, wherein individual materials comprising the winding insulating system and the detector insulating system have dielectric constants between approximately 3 and 6.

3. (original) The resistance temperature detector of claim 1, wherein the detector insulating system includes a plurality of layers of a flexible insulating material and a plurality of layers of an adhesive disposed between the layers of flexible insulating material.

4. (original) The resistance temperature detector of claim 3, wherein the flexible insulating material comprises polyimide, polyester, polyamide-imide, polyetheretherketone, polysulfone or polyphenylene sulfide.

5. (original) The resistance temperature detector of claim 3, wherein the adhesive is selected from the group consisting of acrylic, epoxy, silicone, polyester, and polyurethane adhesive systems.

6. (currently amended) A resistance temperature detector suitable for detecting temperatures between windings of an electrical machine, the detector comprising:

a resistive element configured to receive a measurement signal from a lead and to produce an output signal that is a function of temperature;

a detector insulating system disposed about and completely encasing the resistive element, the detector insulating system having a capacitance per unit area of sufficient magnitude that a voltage stress level experienced by any air voids or low dielectric materials adjacent to the resistive element resulting from voltage applied to the windings during operation is below a stress level that would cause partial discharge in such voids and materials.

7. (currently amended) The resistance temperature detector of claim 6, wherein such partial discharge in the air voids occurs would occur at a breakdown voltage predicted by Paschen's Law.

8. (original) The resistance temperature detector of claim 6, wherein the voltage stress level that would cause partial discharge is a function of temperature of the air voids or low dielectric materials.

9. (original) The resistance temperature detector of claim 6, wherein individual materials comprising a winding insulating system and the detector insulating system have dielectric constants between approximately 3 and 6.

10. (original) The resistance temperature detector of claim 6, wherein the detector insulating system includes a plurality of layers of a flexible insulating material and a plurality of layers of an adhesive disposed between the layers of flexible insulating material.

11. (original) The resistance temperature detector of claim 10, wherein the flexible insulating material comprises a polyimide, polyester, polyamide-imide, polyetheretherketone, polysulfone or polyphenylene sulfide.

12. (original) The resistance temperature detector of claim 10, wherein the adhesive is selected from the group consisting of acrylic, epoxy, silicone, polyester, and polyurethane adhesive systems.

13-22. (canceled)